

REMARKS

In the Office Action, the Examiner rejected the claims under 35 USC §102 and under 35 USC §103. These rejections are fully traversed below.

The claims have been amended to correct minor informalities and to further clarify the subject matter regarded as the invention. Claims 26-27 have been added. Claims 1-27 are now pending. Reconsideration of the application is respectfully requested based on the following remarks.

REJECTION OF CLAIMS UNDER 35 USC §102

In the Office Action, the Examiner rejected claims 1-12, 14-16, and 18-25 under 35 USC §102 as being anticipated by Rai et al, U.S. Patent No. 6,393,482, ('Rai' hereinafter). This rejection is fully traversed below.

As set forth in the Background section of Applicant's specification, "Mobile IP assumes a symmetric control and data link. However, links are not always symmetrical. For instance, satellites provide an asymmetric link. In other words, control and data may flow in only one direction to or from a satellite. As described above, registration assumes a symmetric link environment in which control and data flows in both directions during the registration process. Thus, the standard Mobile IP protocol will not function properly in an asymmetric link environment. See Applicant's specification, page 4, lines 8-13.

The claimed invention enables a mobile device (supporting Mobile IP) such as a mobile router to register with a Home Agent in an asymmetric link environment. This enables a mobile device such as a mobile router to roam to various Foreign Agents within an asymmetric link environment while receiving messages from corresponding nodes.

As recited in claim 1, as amended, each interface of the Foreign Agent is associated with a different care-of address such each of the plurality of interfaces is mapped to a different care-of address; At least one agent advertisement including the care-of address for each of the plurality of interfaces of the Foreign Agent is sent via one or more uplinks. A registration request is then forwarded via a downlink router, the registration request identifying a care-of address associated with only one of the plurality of interfaces of the Foreign Agent. The one of the plurality of interfaces identified by the care-of address is then ascertained, thereby identifying the interface to which the mobile device has roamed. The registration request is forwarded to the Home Agent, and a registration reply is received from the Home Agent. The registration reply is then forwarded to the mobile device via the ascertained interface.

In accordance with standard prior art Mobile IP processes, a single care-of address identifies the Foreign Agent rather than a single interface. Stated another way, only one care-of address is used to identify all of the interfaces of the Foreign Agent. As a result, it is impossible to identify a particular interface of a Foreign Agent through the use of the care-of

address. Moreover, in a symmetric link environment, since data and control flows in both directions, it is unnecessary to identify an individual interface of the Foreign via a separate care-of address, as claimed.

Rai discloses a registration process operating in a symmetric link environment in accordance with standard prior art Mobile IP processes, rather than in an asymmetric link environment as claimed. As shown in FIG. 16 and FIG. 29 of Rai, control information and data flow in both directions. In addition, Rai states that the “care-of address identifies a particular foreign agent in the foreign subnet.” See col 41, lines 48-54. Rai neither discloses nor suggests associating each interface of a Foreign Agent with a different care-of address. Such an association may be accomplished by assigning a care-of address to a particular interface of a Foreign Agent or assigning a different care-of address to each interface of the Foreign Agent. As such, the advertisement transmitted a Foreign Agent in Rai transmits a care-of address associated with the Foreign Agent, rather than a care-of address for only one interface of the Foreign Agent. In addition, the registration request and registration reply of Rai includes the care-of address identifying the Foreign Agent, according to standard Mobile IP processes. Rai fails to disclose or suggest providing a care-of address that identifies only one interface of the Foreign Agent in the registration request (or registration reply) that is transmitted. Accordingly, Applicant respectfully submits that Rai fails to anticipate the claimed invention.

It is important to note that the Foreign Agent maps each of its interfaces to a different care-of address. In other words, the Foreign Agent maintains an association between each interface and its care-of address so that it can provide the appropriate care-of address(es) in its agent advertisement(s). While these care-of addresses may be “assigned” to their corresponding interfaces, the Foreign Agent need not perform the “assigning.” For instance, the care-of addresses may be statically configured. Accordingly, Applicant asserts that the process of assigning does not accurately reflect the steps performed by the Foreign Agent.

The dependent claims depend from one of the independent claims and are therefore patentable over Rai for at least the same reasons. However, the dependent claims recite additional limitations that further distinguish them from the cited references. For instance, with respect to claims 2 and 15, the Examiner asserts that router 54 of FIG. 2 is a mobile router. However, Applicant respectfully asserts that router 54 is merely a router in wireless network 30 supporting ends systems 32 which may be mobile (see col. 18, lines 43-45).

Hence, it is submitted that the dependent claims are patentably distinct from Rai. Thus, it is respectfully requested that the Examiner withdraw the rejection of the claims under 35 USC §102.

REJECTION OF CLAIMS 1-18 UNDER 35 USC §103

In the Office Action, the Examiner rejected claim 13 under 35 USC §103 as being unpatentable over Rai in view of Lee et al, U.S. Patent No. 2002/0075878 A, ('Lee' hereinafter). This rejection is fully traversed below.

As set forth above, Rai fails to disclose or suggest the features of the independent claims. Lee fails to cure the deficiencies of Rai. Moreover, it is important to note that since Rai teaches using a single care-of address to identify the Foreign Agent, Rai teaches away from associating a different care-of address with each interface of the Foreign Agent or identifying only one interface of the Foreign Agent in a registration request or registration reply. Moreover, neither of the cited references teaches the problem associated with standard Mobile IP processes and the limitation of their application in an asymmetric link environment, nor do they teach a solution such as that claimed. Accordingly, Applicant respectfully submits that the Examiner has failed to make out a prima facie case of obviousness. Accordingly, it is submitted claim 13 is patentable over the cited references. Thus, it is respectfully requested that the Examiner withdraw the rejection of claim 13 under 35 USC §103(a).

In the Office Action, the Examiner rejected claim 17 under 35 USC §103 as being unpatentable over Rai in view of Albert et al, U.S. Patent No. 6,606,316, ('Albert' hereinafter). This rejection is fully traversed below.

As set forth above, Rai fails to disclose or suggest the features of the independent claims. Albert fails to cure the deficiencies of Rai. Moreover, it is important to note that since Rai teaches associating a single care-of address with a Foreign agent, Rai teaches away

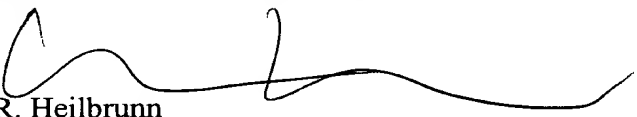
from associating a different care-of address with each interface of the Foreign Agent or identifying only one interface of the Foreign Agent in a registration request or registration reply. Moreover, neither of the cited references teaches the problem associated with standard Mobile IP processes and the limitation of their application in an asymmetric link environment, nor do they teach a solution such as that claimed. Accordingly, Applicant respectfully submits that the Examiner has failed to make out a prima facie case of obviousness. Accordingly, it is submitted claim 17 is patentable over the cited references. Thus, it is respectfully requested that the Examiner withdraw the rejection of claim 17 under 35 USC §103(a).

SUMMARY

If there are any issues remaining which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

Applicants hereby petition for an extension of time which may be required to maintain the pendency of this case, and any required fee for such extension or any further fee required in connection with the filing of this Amendment is to be charged to Deposit Account No. 50-0388 (Order No. CISCP192).

Respectfully submitted,
BEYER, WEAVER & THOMAS, LLP



Elise R. Heilbrunn
Reg. No. 42,649

BEYER, WEAVER & THOMAS, LLP
P.O. Box 70250
Oakland, CA 94612-0250
(510) 663-1100